

Table 2. System Parameters for Kepler-7

| Parameter | Value | Notes |
|--|---------------------------------|---------|
| <i>Transit and orbital parameters</i> | | |
| Orbital period P (d) | 4.885525 ± 0.000040 | A |
| Midtransit time E (HJD) | $2454967.27571 \pm 0.00014$ | A |
| Scaled semimajor axis a/R_\star | $7.22_{-0.13}^{+0.16}$ | A |
| Scaled planet radius R_P/R_\star | $0.08241_{-0.00043}^{+0.00030}$ | A |
| Impact parameter $b \equiv a \cos i / R_\star$ | $0.445_{-0.044}^{+0.032}$ | A |
| Orbital inclination i (deg) | 86.5 ± 0.4 | A |
| Orbital semi-amplitude K (m s^{-1}) | 42.9 ± 3.5 | A,B |
| Orbital eccentricity e | 0 (adopted) | A,B |
| Center-of-mass velocity γ (m s^{-1}) | 0 | A,B |
| <i>Observed stellar parameters</i> | | |
| Effective temperature T_{eff} (K) | 5933 ± 44 | C |
| Spectroscopic gravity $\log g$ (cgs) | 3.98 ± 0.10 | C |
| Metallicity [Fe/H] | $+0.11 \pm 0.03$ | C |
| Projected rotation $v \sin i$ (km s^{-1}) | 4.2 ± 0.5 | C |
| Mean radial velocity (km s^{-1}) | $+0.40 \pm 0.10$ | B |
| <i>Derived stellar parameters</i> | | |
| Mass $M_\star(M_\odot)$ | $1.347_{-0.054}^{+0.072}$ | C,D |
| Radius $R_\star(R_\odot)$ | $1.843_{-0.066}^{+0.048}$ | C,D |
| Surface gravity $\log g_\star$ (cgs) | $4.030_{-0.019}^{+0.018}$ | C,D |
| Luminosity $L_\star(L_\odot)$ | $4.15_{-0.54}^{+0.63}$ | C,D |
| Age (Gyr) | 3.5 ± 1.0 | C,D |
| <i>Planetary parameters</i> | | |
| Mass $M_P(M_J)$ | $0.433_{-0.041}^{+0.040}$ | A,B,C,D |
| Radius $R_P(R_J$, equatorial) | $1.478_{-0.051}^{+0.050}$ | A,B,C,D |
| Density ρ_P (g cm^{-3}) | $0.166_{-0.020}^{+0.019}$ | A,B,C,D |
| Surface gravity $\log g_P$ (cgs) | $2.691_{-0.045}^{+0.038}$ | A,B,C,D |
| Orbital semimajor axis a (AU) | $0.06224_{-0.00084}^{+0.00109}$ | E |
| Equilibrium temperature T_{eq} (K) | 1540 ± 200 | F |

Note. —

A: Based on the photometry.

- B: Based on the radial velocities.
- C: Based on a MOOG analysis of the FIES spectra.
- D: Based on the Yale-Yonsei stellar evolution tracks.
- E: Based on Newton’s version of Kepler’s Third Law and total mass.
- F: Assumes Bond albedo = 0.1 and complete redistribution.